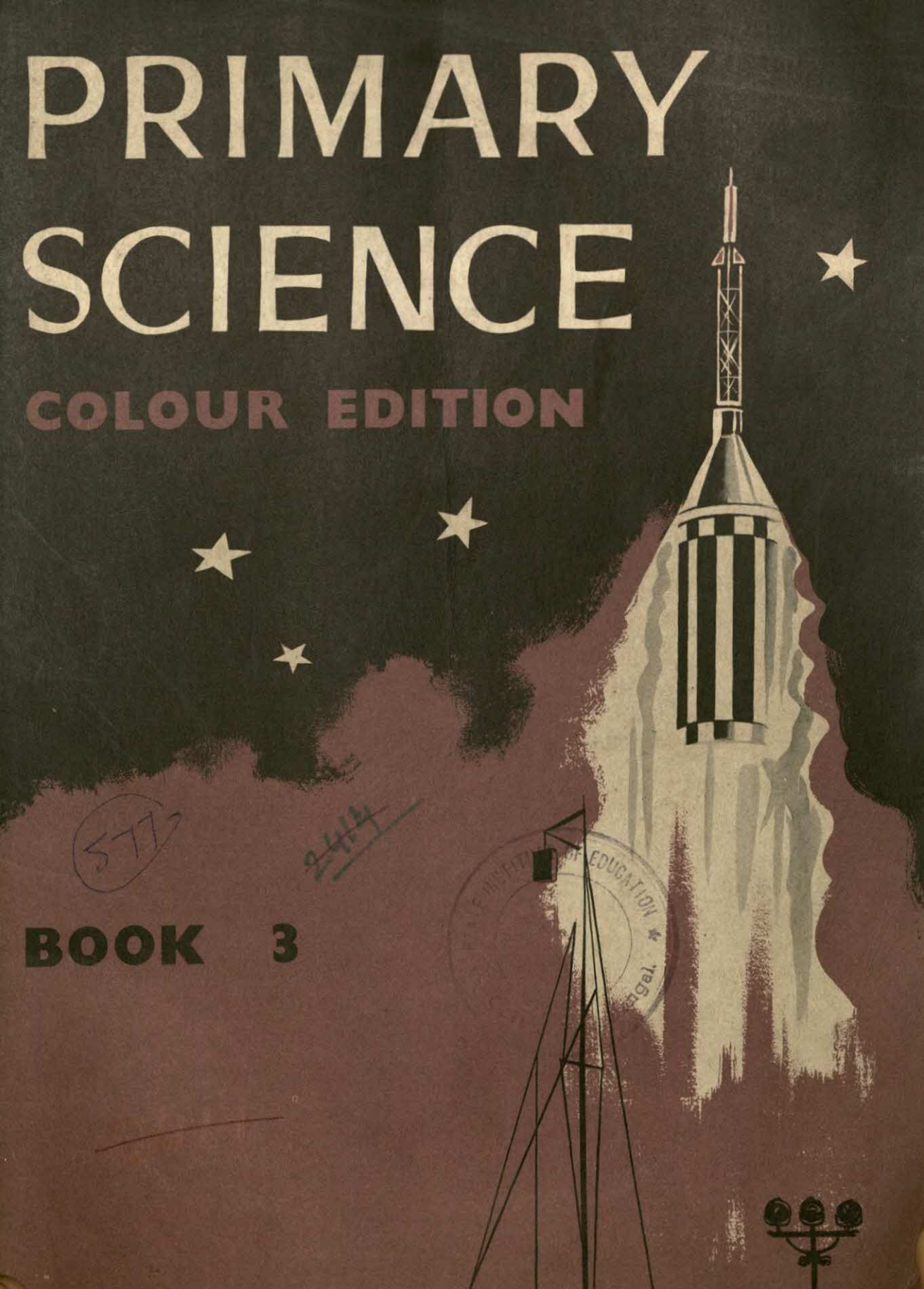
PRIMARY SCIENCE

COLOUR EDITION



BOOK 3

PRIMARY SCIENCE SERIES

FOR INDIA

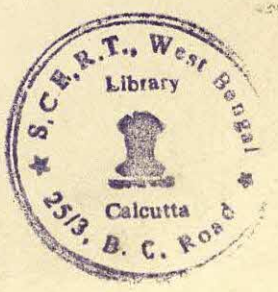
BOOK 3

Adapted for India

by

V. N. Narawane, M.Sc., M.Ed.

MACMILLAN & CO LTD
1968



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PRIMARY SCIENCE SERIES

First Year	Introductory Book	
First Year	Book 1	Living Things — Living Things Grow — Living Things Move — Living Things need Food and Water — Animals Grow — Plants Grow — Animals Move — Animals Eat — Animals and their Babies — Trees, Shrubs and Climbers — Parts of a Tree — Birds — Birds and their Babies — Birds lay Eggs and look after Young — Living Things in Water — Living Things on Land.
Second Year	Book 2	Fruits and Seeds — Growing Seeds — How Fruits are Formed — Growing Plants — Plants as Food — Frog — Butterfly — Lizard — Fish — Bird — Rabbit — Snail.
Third Year	Book 3	Plants need Water — Plants give out Water — Growing Seeds — Animals need Water — Leaves — Animals protect Themselves — Plants protect Themselves — Cockroach — Housefly — Mosquito — Frog — Butterfly — Bird.
Fourth Year	Book 4	The Earth and the Sun — Soils — Flowering Plants — Study of Sea Fishes — Animals of the Sea Shore — Sea Animals — Air — Water — Air Pressure.
Fifth Year	Book 5	More about Air — Human Skeleton — Food — Teeth — Blood Circulation — Breathing — Body Waste — Parasites — The Moon — Erosion — Machines — Weights.
Sixth Year	Book 6	Weather Study — Parts of a Flower: Hibiscus, Lily, Cowpea — Unusual Flowers: Maize, Pumpkin, Papaya — Pollination and Fertilization — Reproduction in Animals — Common Diseases — Public Health Services: Water Supply, Refuse Disposal — Animals with and without Backbones — Study of Trees — Heat as a source of Energy: Engines — Light: Sources, Reflection, Colours — Sound — Electricity: Usefulness, Conductors and Insulators, Switches, Resistances, Fuses.

All the books contain 'things to do' or practical experiments to perform. Questions are included at the end of each lesson or chapter.

Contents

Leaves.

Most plants have green leaves. Some have big leaves and others have small leaves.

Here are some plants and their leaves. Have you seen them before? Colour them.

Things to do.

Collect leaves for the nature table.

Look at the leaves carefully.

1. Are all leaves green? .....

2. Do all the leaves have the same shape?

.....

3. Are the leaves big or small?

.....

4. Draw some leaves in the space below.

Parts of a leaf.

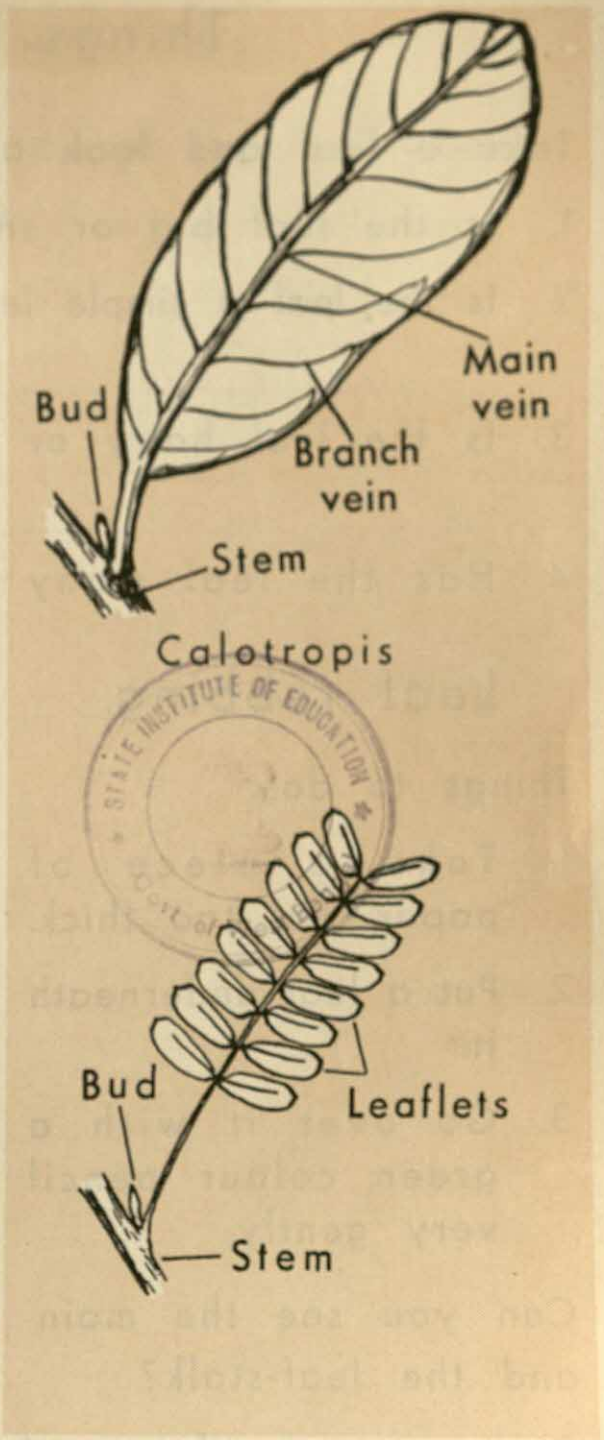
A leaf has many parts. It has a big vein in the centre. This is called the main vein. There are other small veins.

These are called branch veins. The green part is called the leaf-blade. This leaf has a leaf-stalk. Some leaves have no leaf-stalks.

Pick a leaf and draw it here. Name the parts.

This leaf has a white juice inside it. It grows on a small tree. Because it has a simple shape it is called a simple leaf. You can see from the picture that the leaf is joined to a stem. A bud grows between the leaf-stalk and the stem.

This leaf here is different from the one above. It is made up of many smaller parts. Each part is called a leaflet. This leaf has many leaflets. It is called a compound leaf. Is there a bud between the compound leaf and the stem?



Things to do.

Take a leaf and look at it very carefully.

1. Is the leaf big or small? .....
2. Is the leaf a simple leaf or a compound leaf?

.....

3. Is the leaf hairy or smooth?

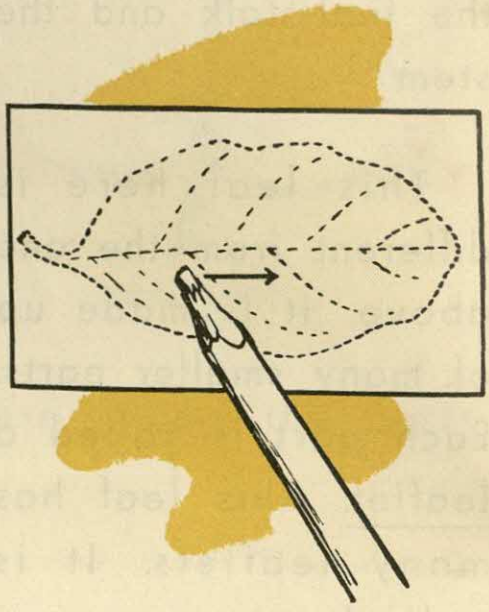
.....

4. Has the leaf many veins? .....

Leaf rubbing.

Things to do:-

1. Take a piece of paper, not too thick.
2. Put a leaf underneath it.
3. Go over it with a green colour pencil very gently.

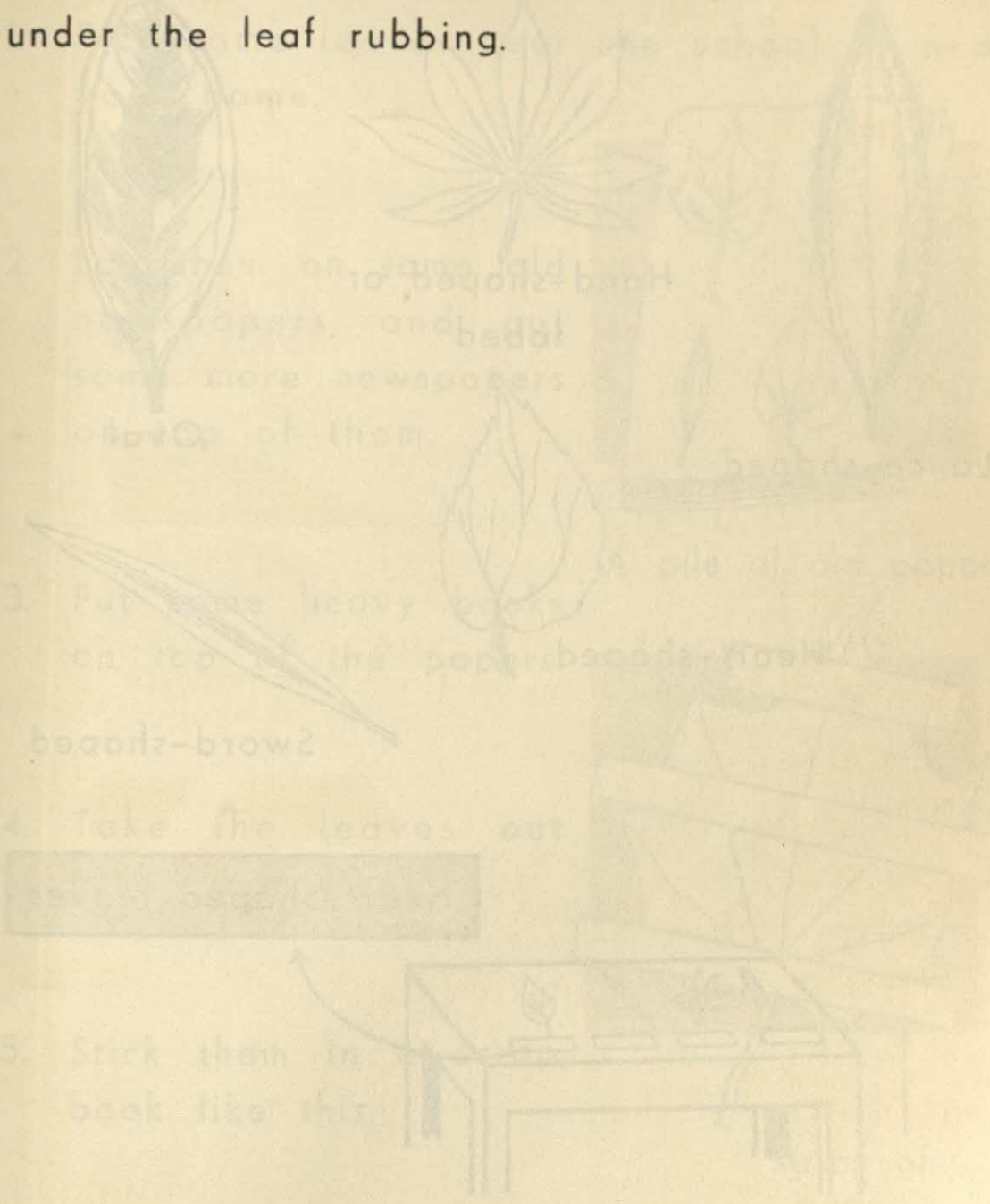


Can you see the main vein, the branch veins and the leaf-stalk?

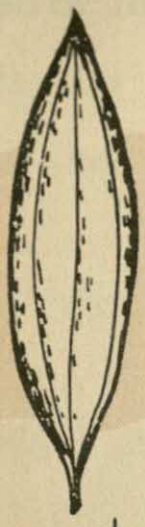
Cut out some of your leaf rubbings and paste them on the next page.

Leaf rubbing.

If you know the name of the leaf write it under the leaf rubbing.



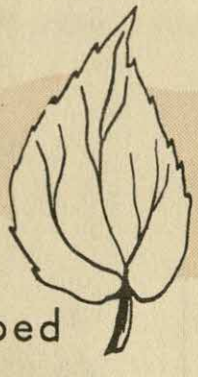
Bring some leaves to school and put them on the nature table in groups like this:–



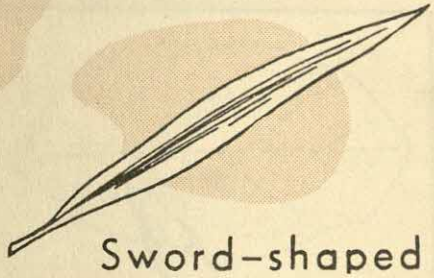
Lance-shaped

Hand-shaped or lobed

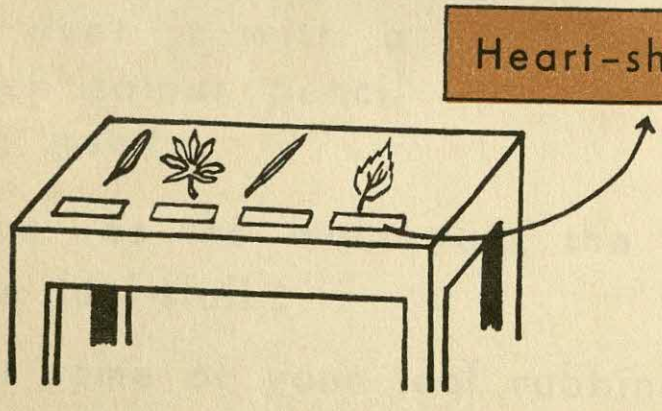
Oval



Heart-shaped



Sword-shaped



Heart-shaped leaves

How to keep leaves.

Things to do at home.

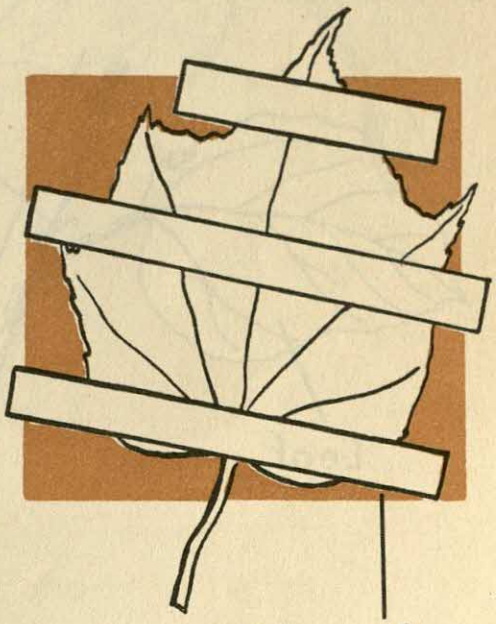
1. Pick some leaves near the school or near your home.

A pile of old papers

2. Lay them on some old newspapers, and put some more newspapers on top of them.

3. Put some heavy books on top of the papers.

4. Take the leaves out after two weeks.



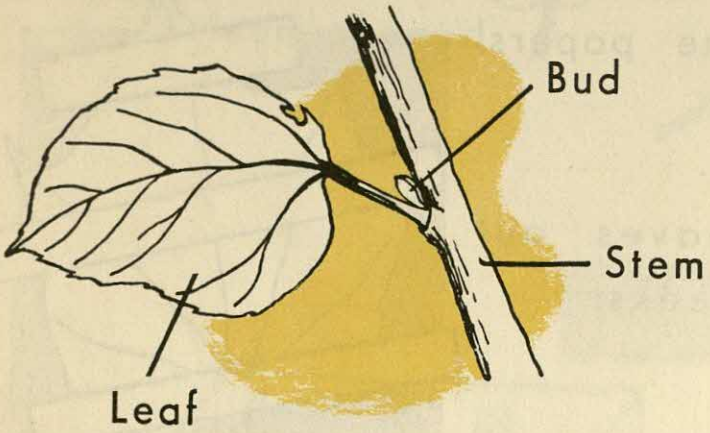
strips of paper fixed with paste

5. Stick them in a scrap book like this.

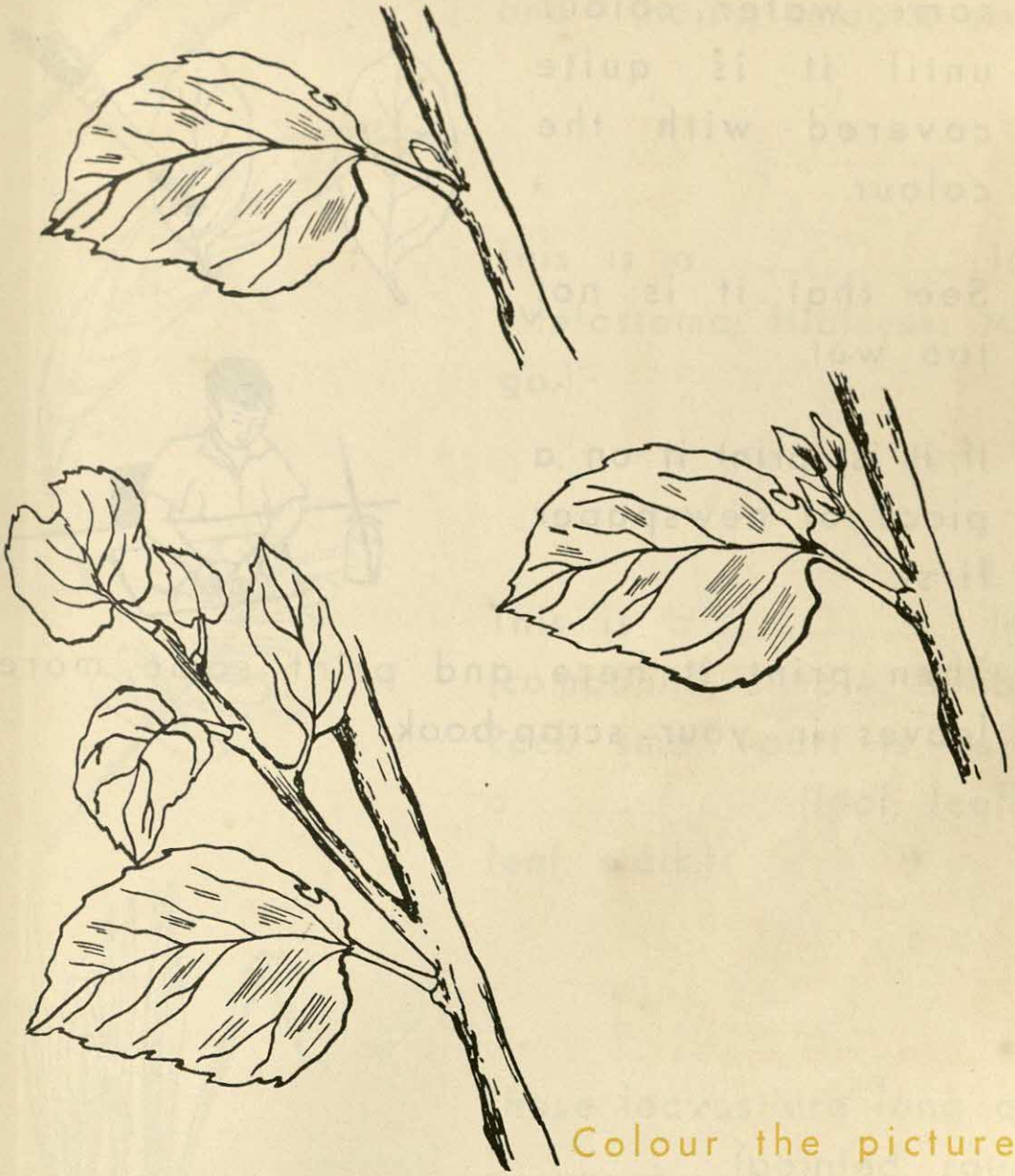
How leaves grow.

Here is a branch with leaves growing on it.

If you look at the place where the leaf joins the stem, you will see a small green thing growing on the stem. It is a bud.



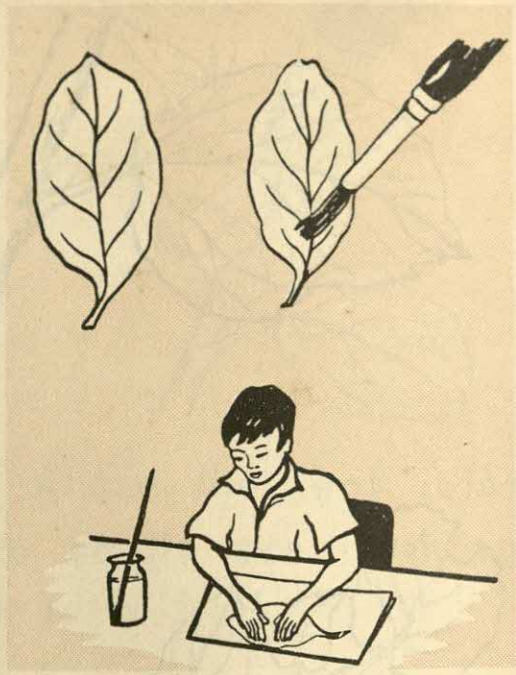
The pictures below tell you what happens to the bud. It grows into a new branch with many small leaves on it.



Colour the pictures.

How to do leaf printing.

1. Take a leaf and carefully brush it with some water colour until it is quite covered with the colour.

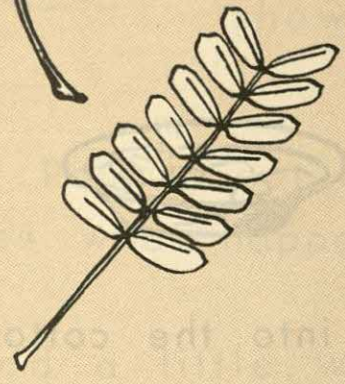


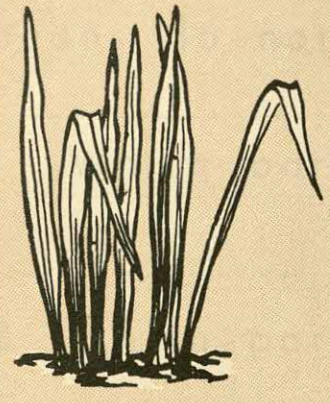
2. See that it is not too wet.

3. If it is, print it on a piece of newspaper first.

4. Then print it here and print some more leaves in your scrap-book.

Leaf printing of a.....





Exercise.

A banana leaf is a ..... one. (hairy, smooth, small)

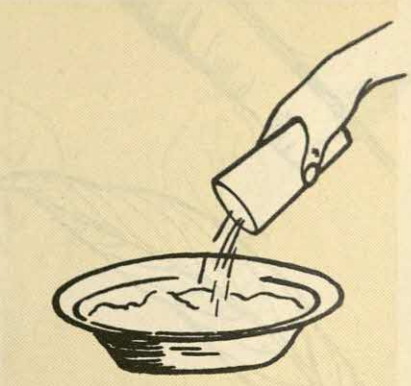
This is a ..... leaf. (Melastoma, Hibiscus, Mango.)

This is a ..... leaf. (compound, simple, double.) Each small part is called a ..... (leaf, leaflet, leaf stalk.)

These leaves are long and ..... (pointed, round, thick.)

Let us grow some seeds.

Put a piece of cotton wool on a plate.



Wet the cotton wool and put some beans or other seeds on it.

Water them every day, and see what happens to them.

Do they grow into plants?

.....

Which part come out first, the shoot or the root?

.....

Do the roots grow downwards into the cotton wool?

.....

Do the shoots grow upwards?

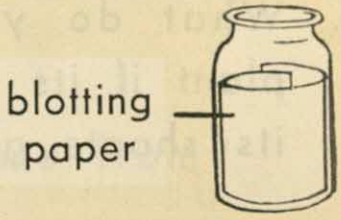
.....

Have they any green leaves?

.....

Does it matter which way up seeds are planted?

1. Get a jam jar and put in it a piece of blotting paper, as shown in the picture.



2. Put 3 beans between glass and paper in three different ways as shown here.

3. Pour about an inch of water into the jar See what happens during the next few days.

Add a little water every day, so that the beans do not dry up.

1. Which part of the seed appears first?

.....

2. Which part of the seed appears next?

.....

3. Do all the roots grow downwards?

4. Do all the shoots grow upwards?

5. What do you think would happen to a plant if its roots grew up into the air and its shoots grew down into the ground?

Do roots take in water?

1. Get two Balsam plants.

2. Wash away soil from the roots.

3. Get two bottles and fill them with water. Put some red ink in one.

4. Put the Balsam plants into the bottles.

5. Take a look at the plants after three hours. First look at the plant from the bottle with no ink in it.

Can you see any red colour in the leaves? Now look at the other plant. Has it any red colour in its leaves?

Where has the red colour come from?

Now cut the stem of each plant and look at the cut edges.

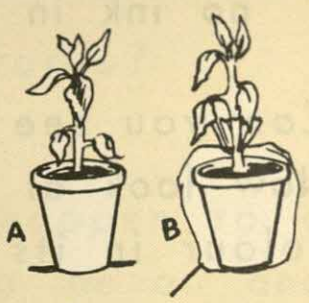
Which one has red marks inside it, as in the picture above?

Does this tell us how the red colour gets into the leaves?

Can leaves take in water?

1. Get two plants growing in pots.

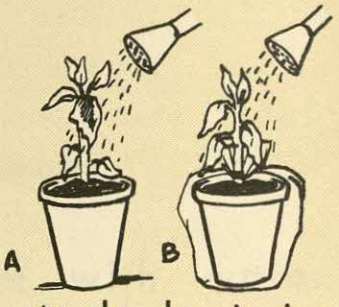
2. Cover one of the pots with a plastic bag, which should be tied round the plant stem so that no water can get into the pot. Do not cover the other.



plastic bag tie tightly

3. Leave them in the sunlight for a few days.

4. Water the plants every day.



At the beginning

Questions.

1. Do the two plants look the same at the beginning?

.....

2. Do the two plants look the same after a few days?

.....

3. Do the roots of the plant in pot A receive water?

4. Do the roots of the plant in pot B receive water?

5. Do the leaves in pot B receive water?

6. Why does the plant in pot B wilt?

7. Does this tell you that leaves cannot take in water?

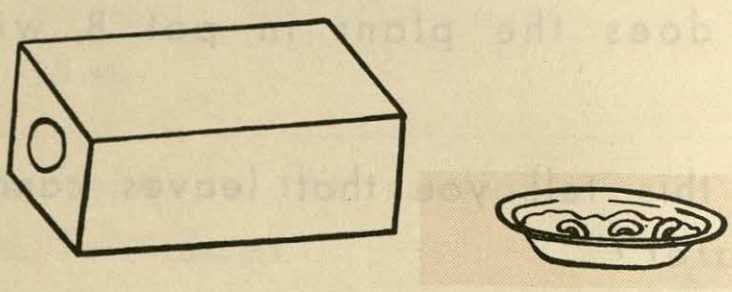
8. What do the plants look like at the end of the experiment?
   Draw them here.

Do shoots grow towards light?

1. Grow some beans in 2 plates. Mark one A and the other B.

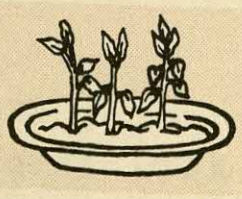
2. Place both plates in the sun.

3. Get a box and make a hole in one side.



4. Cover plate A with the box, but leave plate B uncovered. Water the plants every day.

5. After a few days look at both sets of plants.



Do the plants in the two plates look the same?

Draw the two sets of plants here.

Can you answer these questions?

1. Did the plants in plate A grow?

2. Did the plants in plate B grow?

3. Did the plants in plate A grow towards the hole?

4. Can you explain why?

5. Does this show that plants grow towards light?

Do leaves give out water?

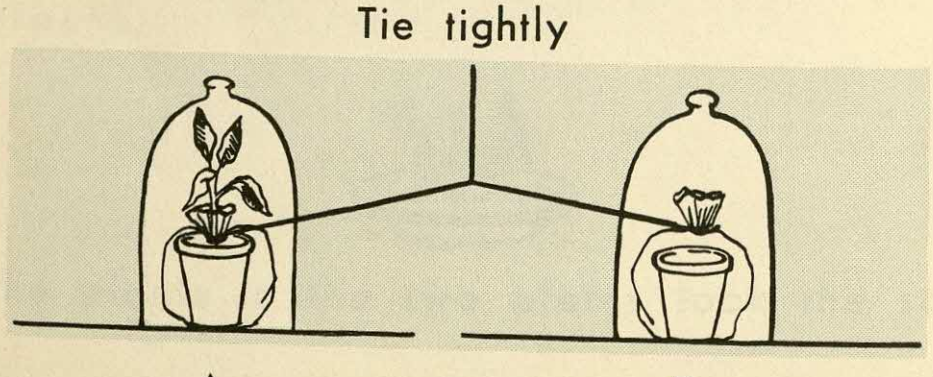
We have learnt that roots take in water but leaves do not. Now we are going to see what happens to the water that is taken in by the plant.

1. Take two pots with soil in them. One pot should have a plant growing in it, but the other should not.

2. Water both pots.

3. Cover each pot with a plastic bag, but leave the plant uncovered. The bag should be tied tightly round the stem of the plant.

4. Now cover each pot with a glass jar, as in the picture.



5. Leave both jars in the sunlight for an hour.

6. After that time, take a good look at the inside of both jars.

What do you see in jar A?

.....

Do you see the same thing in jar B?

.....

Can you explain what has happened?

.....

Does this show that leaves give out water?

.....

A summary.

From our experiments we have found many things. We now know that

a. Roots take in water from the soil.

b. Water goes up to the leaves through the stem.

c. Leaves give out water.

We need water.

We know that plants need water. We need water, too.

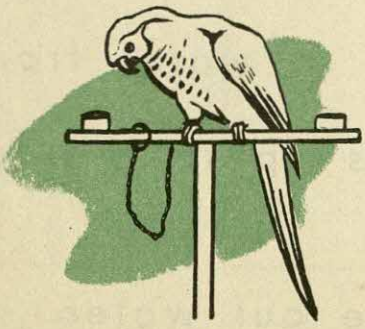
After Ashok has been playing in the garden he feels thirsty, so he goes into the house to drink water.

Ashok's mother gets the water from the tap.

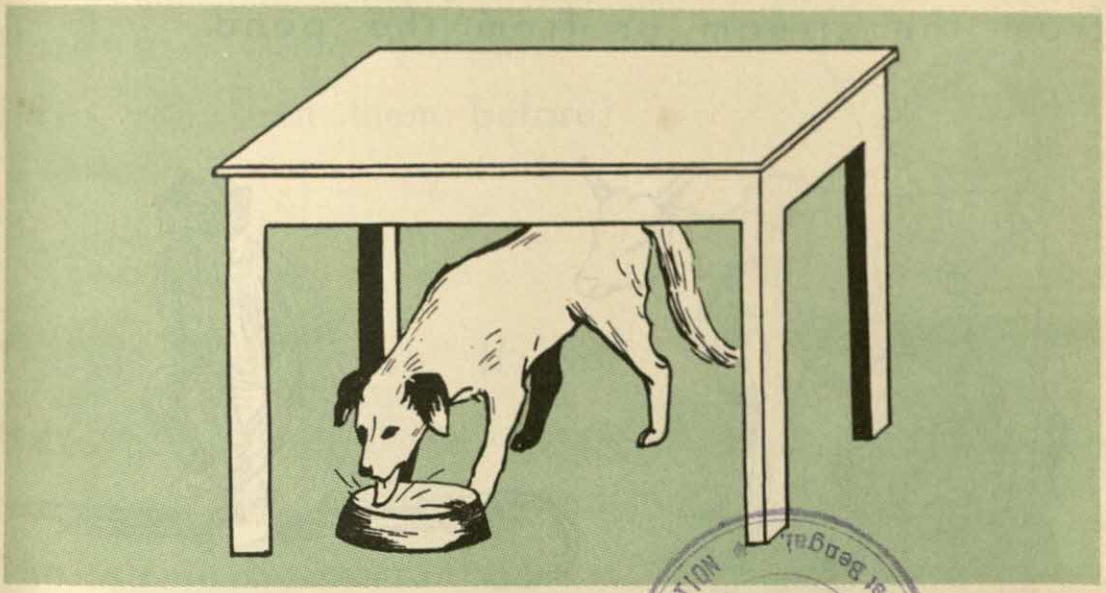
Ashok's cousin, Mohan, lives in the country. There is no tap-water in his house. He gets his water from a well.

Animals also need water.

Mohan, keeps a parrot and a dog. He gives his parrot water every day in a tin



Mohan's dog drinks water from a dish under the table.



Things to do.

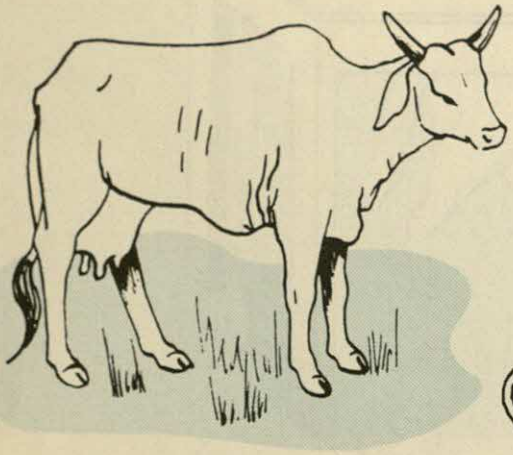
1. Take two pots of plants. Leave them in the sun. Water one pot every day, but do not water the other.

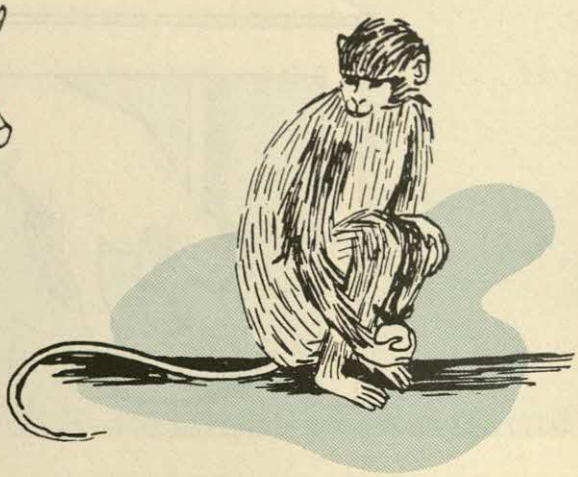
2. Which plant will wilt? .....

3. Does this show that the plant also need water? .....

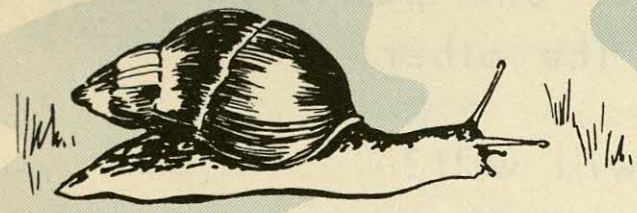
These animals live in the open air.

Do they need water? They get their water from the stream or from the pond.





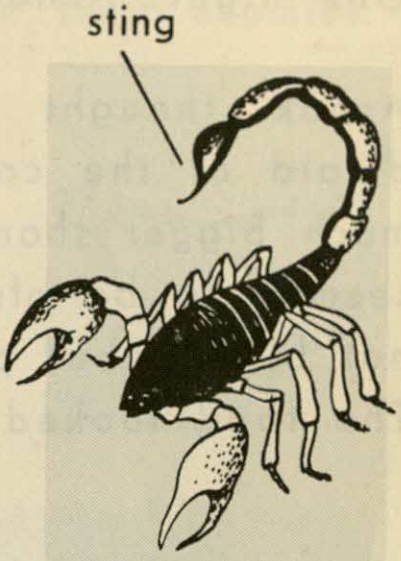
These animals get their water from the plants they eat.



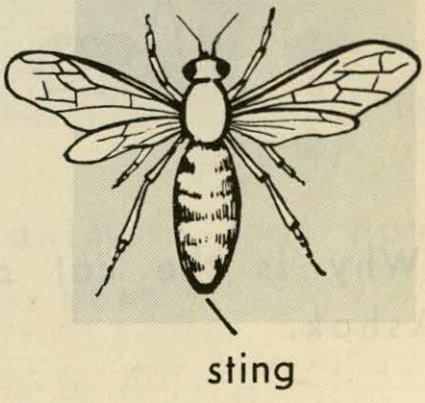
Can you name these animals?

How animals protect themselves.

Here are some animals.
Have you seen them before?



This is a scorpion. If you try to catch it, it will give you a very painful sting. The sting is poisonous. It is at the end of the tail.

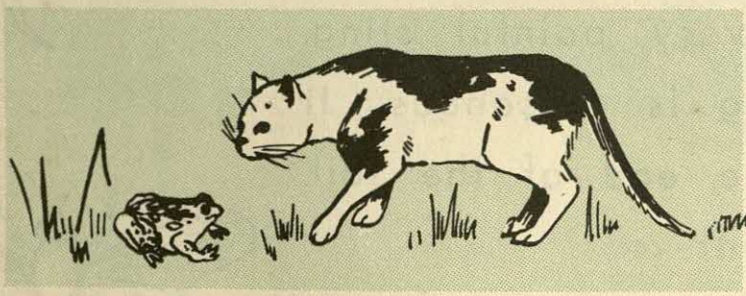


This is a yellow insect called the hornet. It too has a sting. We cannot see the sting because it is hidden inside the hornet's body.

The cat and the toad.

One night, Ashok's cat found a toad.

Ashok thought that the toad would be afraid of the cat, because the cat was so much bigger than the toad. Instead, the cat seemed to be afraid of the toad, and would not bite it, but pushed at it with her paws. The toad looked very angry.



"Why is the cat afraid of the toad?" asked Ashok.

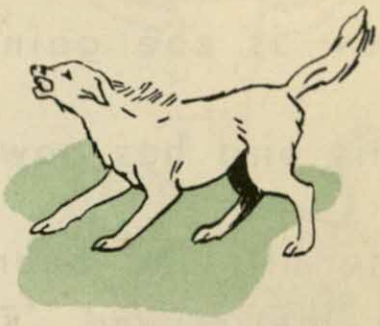
His father replied "The toad's skin gives out a poison, so the cat is afraid to bite it."

After a while, the cat left the toad and went away. The toad hopped into the drain and disappeared.

Some animals have sharp teeth.

The animals shown here have some means of protecting themselves from their enemies.

The dog has sharp teeth.

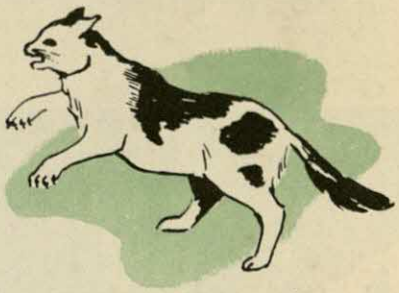


It fights and bites with its teeth.

Do you know two other animals that have sharp teeth?

Write their names here.

1. ..... 2. .....



The cat protects itself with its sharp claws. We cannot see the claws because they are hidden under its soft paws.

Do you know two other animals that have claws? Write their names here.

1. ..... 2. .....

Draw one of them here.

A bird with sharp beak and claws.

The black baby bear is going to take eggs from the nest. The big mother bird returns.

How is she going to save her eggs?

This bird has powerful wings and strong claws.

She lifts the bear by her claws and drops it to the ground. Then she returns to her nest to guard her eggs. This big bird is an eagle.

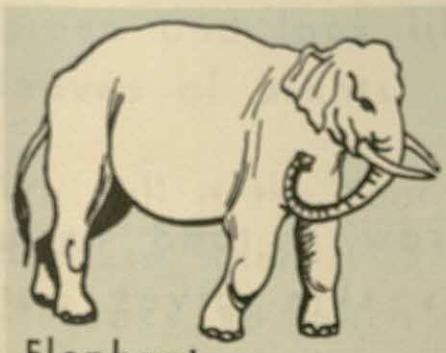
Some animals have horns.

Here is a skull of a wild buffalo. It has two long sharp horns. Ashok's father bought it from an Indian hunter who shot the animal in the jungle.

Many animals have horns. Some have long horns and others have short ones. Horns are hard and strong. Animals fight with their horns. An elephant has long teeth which look like horns and are called tusks. Here are some animals that have horns or tusks. Colour them.

Wild Boar.

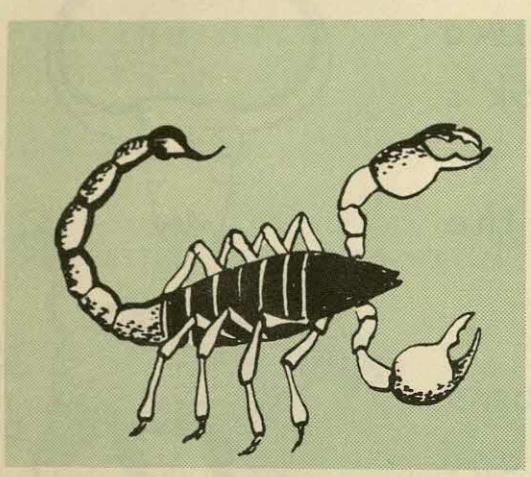
Deer.



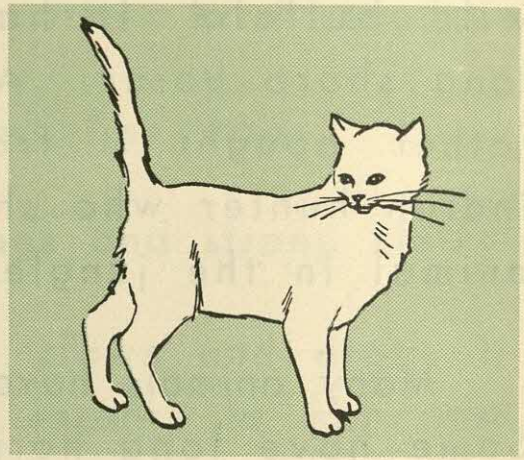
Elephant.

Rhinoceros.

Complete these drawings. Write their names on the dotted lines. How do these animals protect themselves?



Scorpion. It protects itself with a.....



Cat. It protects itself with its.....

Draw an animal that protects itself with its horns.

Draw a toad here. Its skin gives out

.....

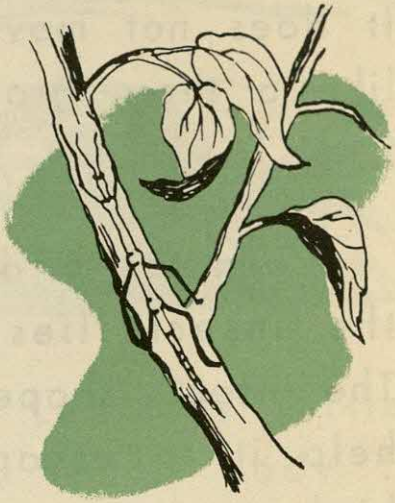
Animals that look like plants.

Many animals have no sharp claws or stings.

They have some other means of escaping from danger.

Usually the colour of their bodies is the same as that of their surroundings, so that their enemies cannot see them easily.

Can you see an insect in this drawing? Does it look like a piece of stick?



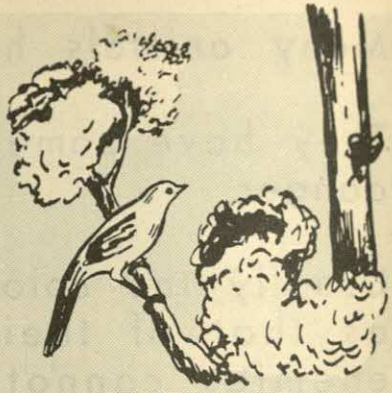
This insect is called a Stick Insect. Do you know why?

This insect has two big wings. The wings are green and look like the leaves of plants.

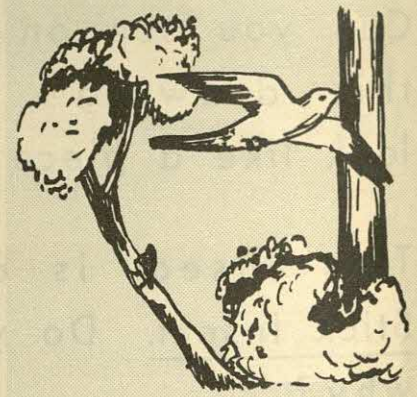
We call it the Leaf Insect, because when it is resting it looks so much like a leaf.

How some insects escape.

This bird has been looking for food, flying from one tree to another. Here it is perching on a branch. It does not see the insect on the other tree. Can you see it? It does not move, but looks like a thorn growing on the tree.



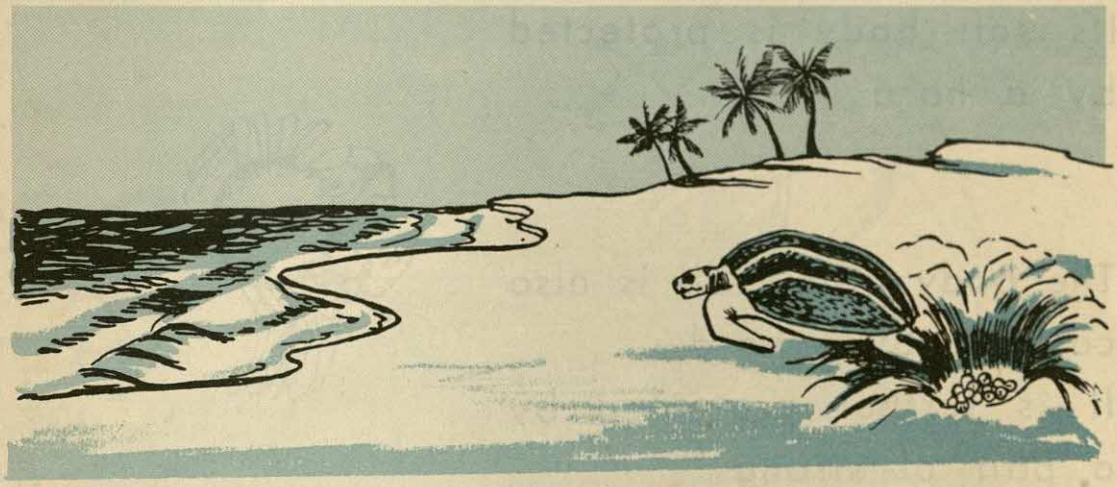
When the bird flies away, the insect flies away too. The insect's shape and colour help it to escape from the bird.



Here is another insect. What is it? How does it escape from its enemies?

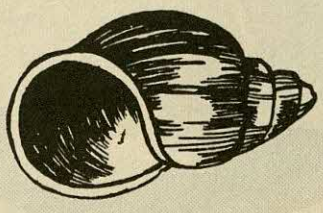
Animals with shells.

This turtle is going back to the sea after laying her eggs on the beach. Can you see the eggs? How many are there?

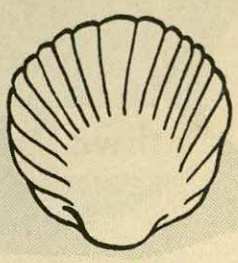


This turtle is called the Leathery Turtle. It can grow very big. Its tough body is covered by a hard shell. This shell protects it from other large sea animals.

These animals also have shells.



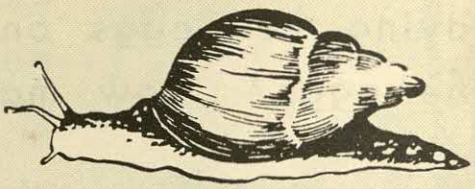
A garden snail



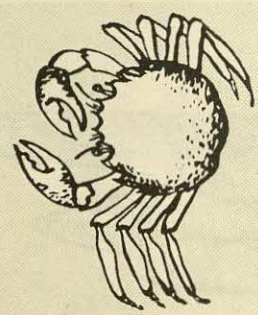
A cockle

Exercise.

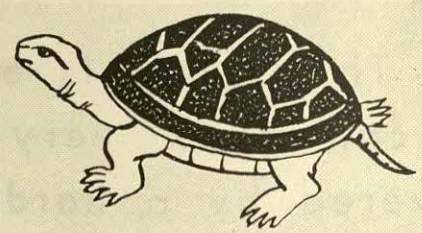
Here are some animals that have shells.



This is a garden.....
Its soft body is protected by a hard.....



The body of a crab is also covered by a hard.....
It is further protected by a pair of strong.....

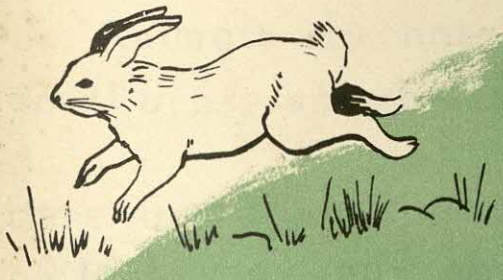


The ..... too has a.....

Draw an animal that is hidden from its enemies by its colour.

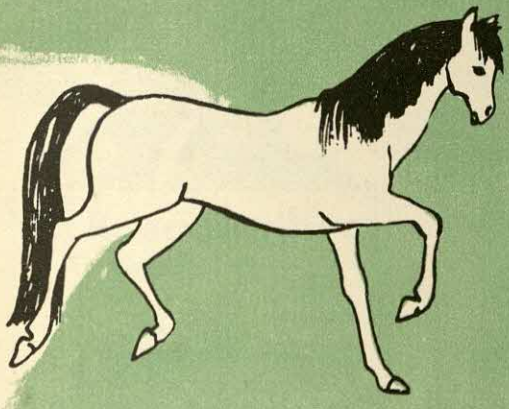
Animals that run or fly.

Many animals do not have horns or claws or sharp teeth. How do they protect themselves? They can run or fly very fast. Here are some of them.



Rabbit

Kangaroo



Horse

Swift

Draw an animal which has a hard shell.

Draw an animal that can run very fast.

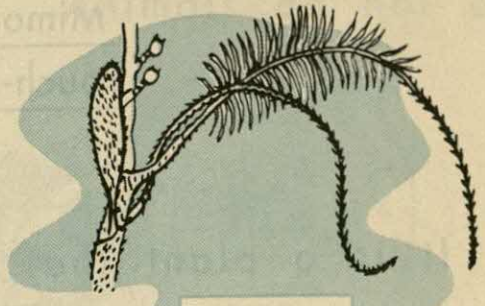
Plants protect themselves.

Some plants too have means to protect themselves from being eaten. Of course, they cannot run away as animals do. Nor have they horns, or shells or claws. Some of them have sharp thorns on their stems. Others have hairs on their leaves.

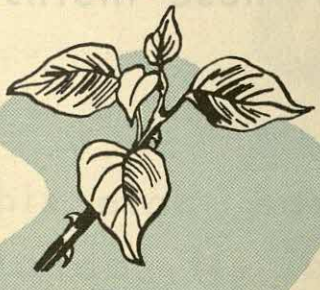
Animals do not eat plants that have hairs or thorns, so the plants are protected.

Here are four plants that have thorns or hairs on their stems.

Bougainvillea



Rattan



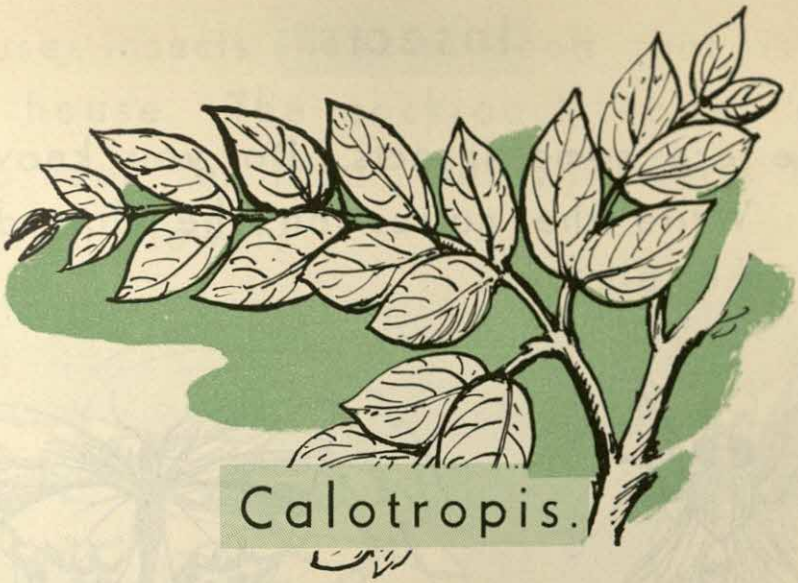
Rose

Bamboo

Everyday Ashok goes to the garden to cut grass for his two rabbits. One day as he walked across the field he gave a yell of pain and lifted up his leg. There he saw a very small thorn. He pulled out the thorn. Then he looked for the plant that had pricked him. This was what he found.

Mimosa or
Touch-me-not.

It is a plant that has very small leaves. Have you ever seen one? It has many small thorns on its stem. What are these thorns for?



Calotropis.

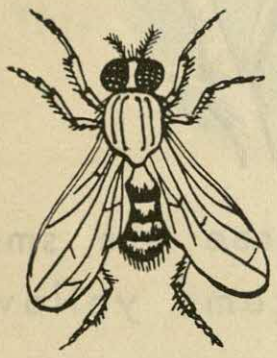
The leaves of this small tree are smooth. When they are old, they become yellow.

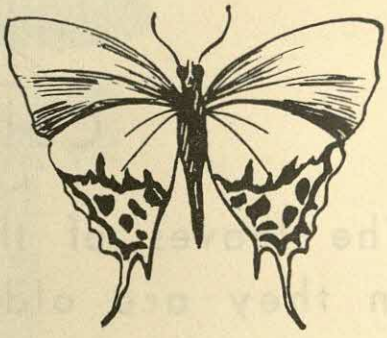
If you break a leaf, white juice flows out. This juice is poisonous. Animals do not eat these leaves.

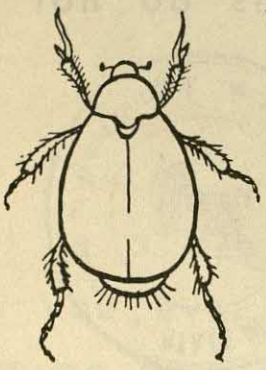
This plant has yellow flowers. It is the Allamanda. Its leaves also have poisonous juice.

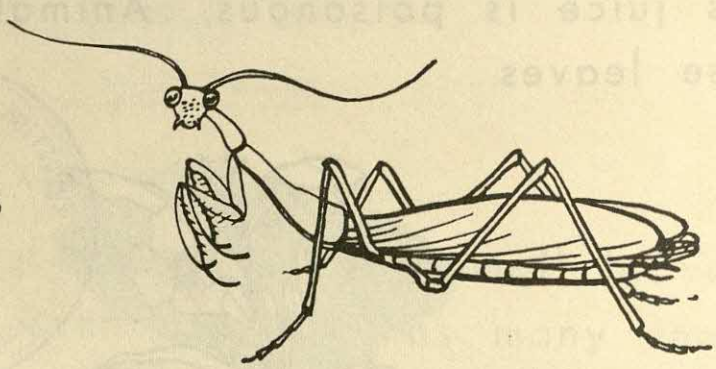
Insects.

Here are some insects. Do you know their names? Write the names on the dotted lines Colour the pictures.









Words to help you.

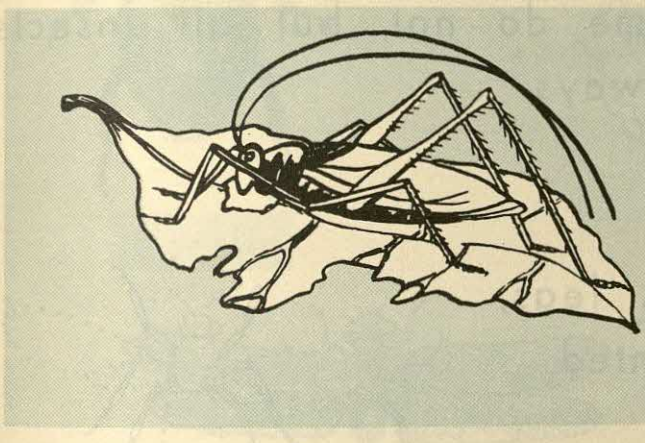
Butterfly

Housefly

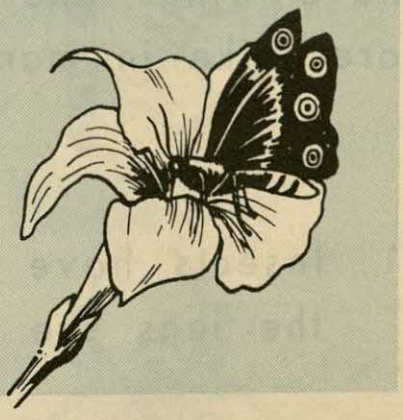
Praying mantis

Beetle

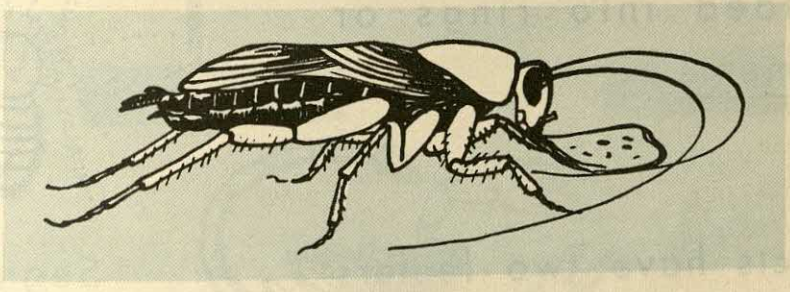
House insects live on food that is found in the house. The cockroach comes out at night to look for food. Garden insects live on leaves and flowers.



The grasshopper eats leaves.



The butterfly sucks the juice of flowers.

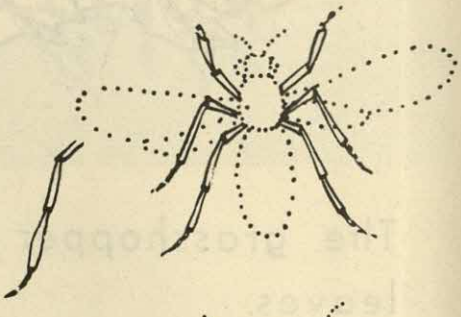


The cockroach eats stale bread.

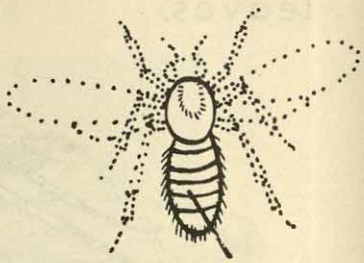
Parts of an insect.

There are many kinds of insects. Some live in the house. Many live in the garden. Some have wings and some do not, but all insects are alike in many ways.

1. Insects have six legs, the legs are jointed.

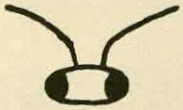


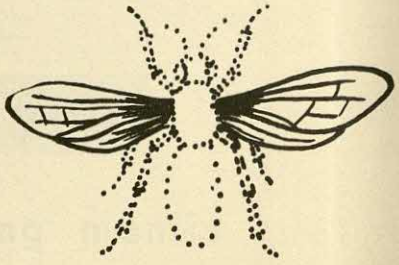
2. An insect's body is divided into rings or segments.



Segment

3. Insects have two feelers and two eyes.

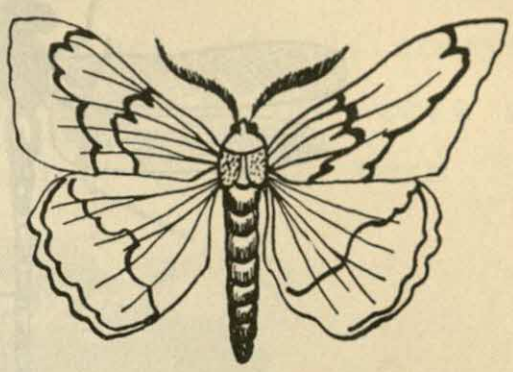




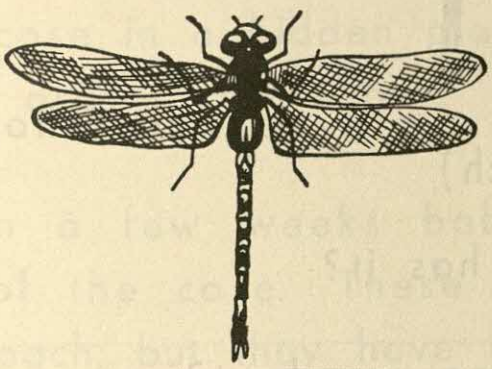
4. Winged insects have four wings, except flies, which have only two.

Draw a circle round each insect and a X on each animal that is not an insect.

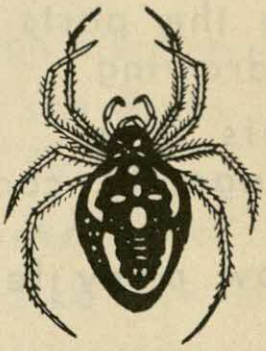
Beetle



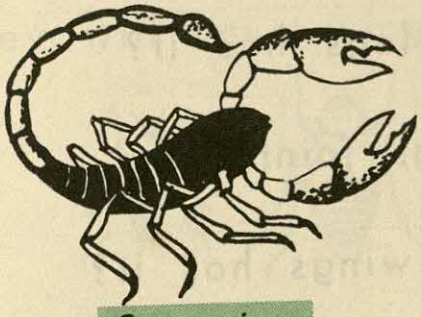
Moth



Dragonfly



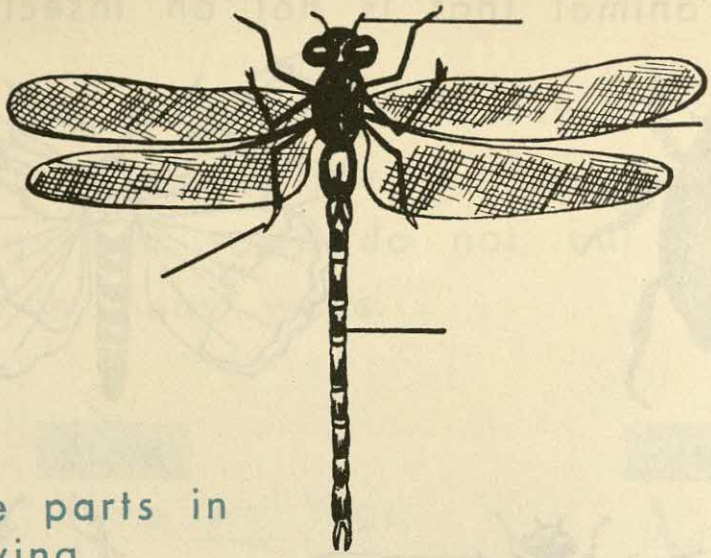
Spider



Scorpion

How can you tell whether a spider is an insect or not?

Exercise.



Name the parts in this drawing.

1. This is a ..... (grasshopper dragonfly, cockroach)
2. How many feelers has it?

   .....
3. Are the feelers long or short?

   .....
4. How many legs has it?

   .....
5. Are the legs jointed?

   .....
6. How many wings has it?

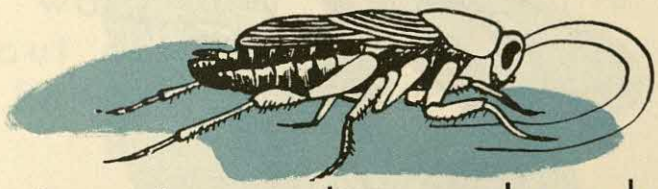
   .....
7. Are the wings closed or open?

   .....
8. Are the eyes big or small?

   .....

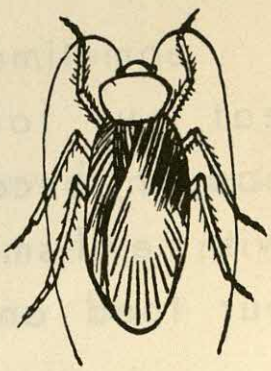
The cockroach and her babies.

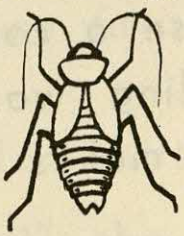
This is a mother cockroach. She is carrying a small case under her body. In this case are cockroach eggs. We call it an egg case.



One day the mother cockroach leaves her egg case in a hidden place such as the corner of a drawer or a box. Then she goes away.

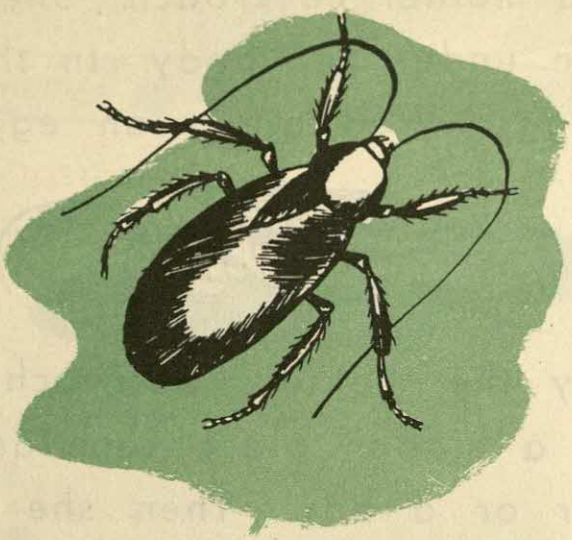
In a few weeks baby cockroaches come out of the case. These look like the mother cockroach, but they have no wings. When the baby cockroaches are fully grown, they will have wings.





Keep a cockroach's egg case in a glass and see how long the eggs take to hatch.

Cockroaches make our food dirty.



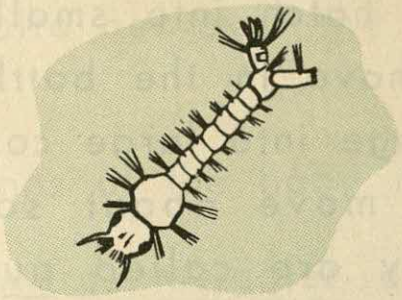
Cockroaches come out at night looking for food. They eat stale bread and other scraps of food we throw away.

Sometimes they come to our table and eat our food. You must not allow this to happen, because a cockroach's body is covered with evil-smelling wax, which rubs off on to our food and makes it unfit to eat.

Ashok finds a bottle.

Walking home from school one day, Ashok saw a bottle lying by the road side. He picked it up.

There was water in the bottle, and swimming about in the water were some small animals. Some of them looked like this,



and others looked like large black commas.

He took the bottle home to show it to his sister.

Ashok's sister is older than he is.

"What have you there?" she asked.

Ashok showed her.

"Oh! these are baby mosquitoes," she said.

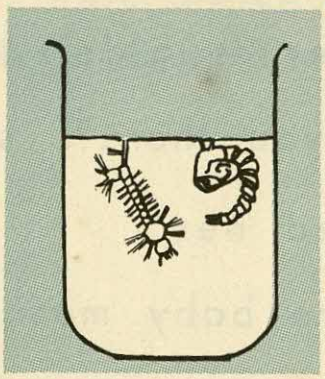
"But these have no wings!" said Ashok.

"Now let me tell you the story of a mosquito." Ashok sat down and listened.

"The mother mosquito lays her eggs on the water. She lays about a hundred and fifty eggs at one time. The eggs are very small and they float on the water.

These eggs hatch into small wrigglers like the ones you have in the bottle. When these grow they change into large comma-like things. These do not move about so much as the wrigglers. They are called pupae. One day the pupa floats to the surface. Its skin breaks open and a mosquito comes out of it. So, you see, the wrigglers and pupae are baby mosquitoes."

Ashok was very pleased to learn about the mosquito and how it spends its early life.



Ashok's glass

Things to do.

Look for wrigglers near your house. They live in water, perhaps in the drain, perhaps in a tin that has water in it.

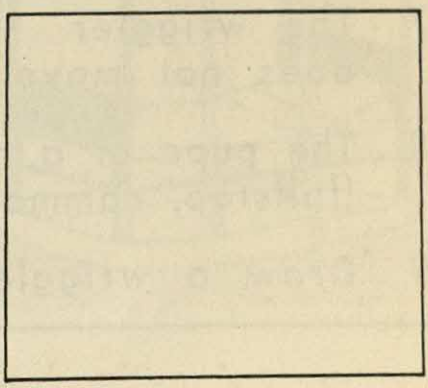
Bring these animals to school in a bottle.

Tie a mosquito net over the bottle. Look at them every day.

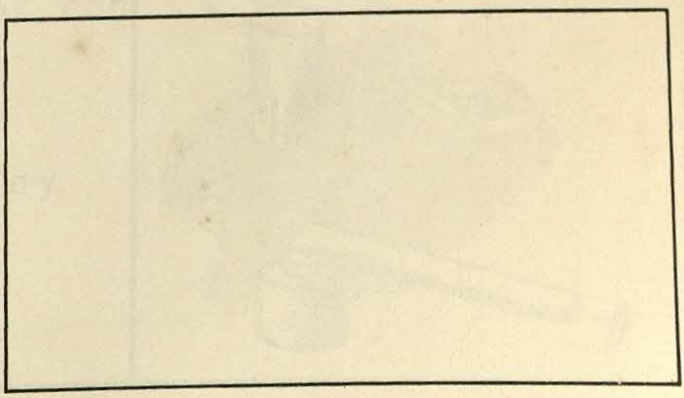
Make drawings of the baby mosquitoes here.

Write the words wriggler and pupa under your drawings.

Draw the bottle used here.

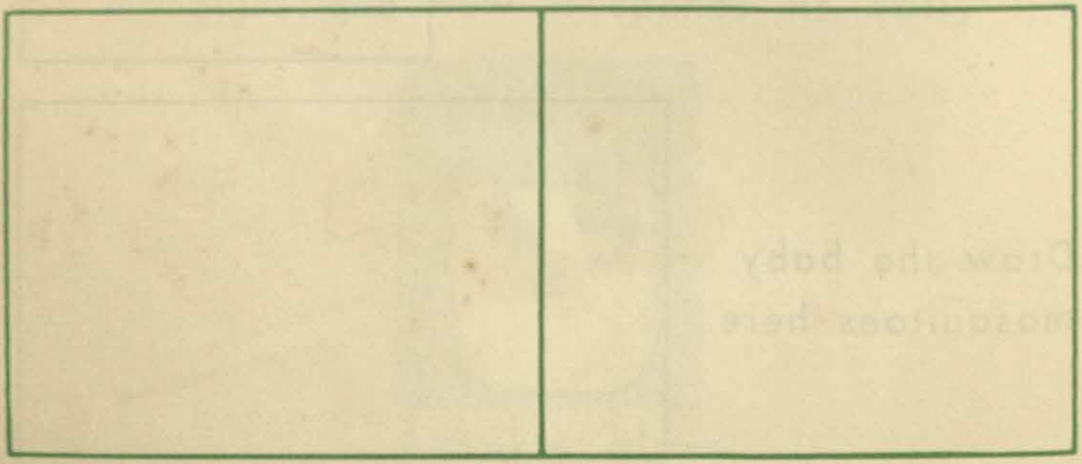


Draw the baby mosquitoes here.



Answer these questions.

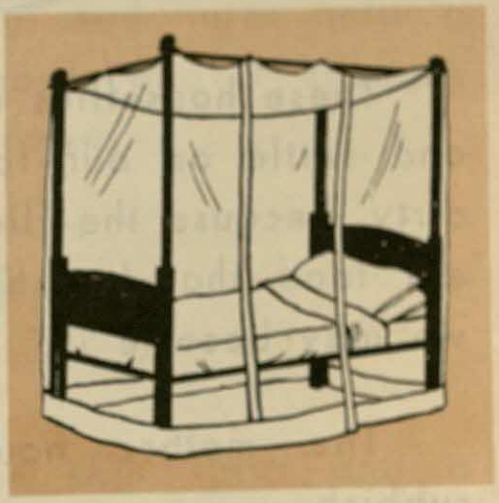
1. A mosquito is _____ (an insect, a larva, a wriggler.)
2. A mosquito has _____ legs. (two, four, six.)
3. The mother mosquito lays her eggs _____ (in a box, on water, in the air.)
4. The eggs of a mosquito _____ in water. (float, sink.)
5. A mosquito egg hatches into a _____ (wriggler, pupa, mosquito.)
6. This eats and grows into a _____ (pupa, mosquito, wriggler.)
7. The wriggler _____ a lot. (moves, does not move.)
8. The pupa of a mosquito looks like a _____ (fullstop, comma, pen.)
9. Draw a wriggler and a pupa here.



How to get rid of mosquitoes.

Mosquitoes are harmful insects. They come out at night looking for food. Usually they suck the juice of plants but some of them bite us and suck our blood.

There are many kinds of mosquitoes. Some kinds carry diseases, so that their bite makes us ill.



Here are some ways to get rid of mosquitoes.

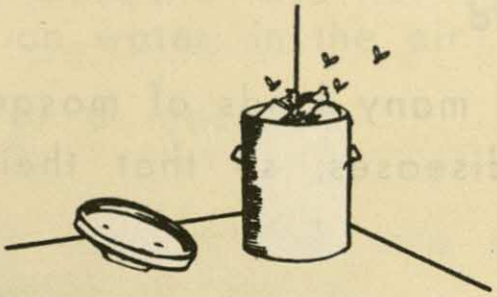
1. Sleep under a mosquito net.

2. Do not leave tins lying about so that they collect water in which mosquitoes can lay their eggs.

3. Use a fly spray.

The housefly.

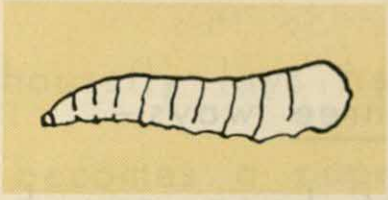
Here is a dustbin, full of rubbish. The lid is off, and there are many houseflies flying about, feeding on the rubbish.



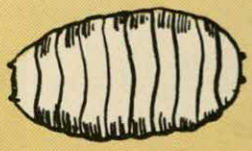
These houseflies often come into our houses and settle on our food. This makes our food dirty, because the flies' bodies are dirty. If we eat food that has had flies crawling over it, we may become ill.

The mother housefly lays her eggs in rubbish.

Each egg hatches into a tiny white creature called a maggot.



The maggot feeds on the rubbish in which the egg was laid. It grows bigger and bigger. One day it stops feeding and turns into a pupa. Its skin becomes hard, and it changes colour, becoming reddish-brown.



pupa

After a few days, the skin splits and a young housefly wriggles out of it.

Houseflies are dirty insects. They make our food dirty and bring sickness. We must keep them away from our food.

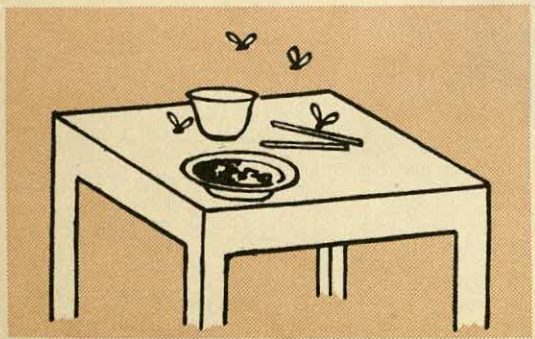
How can we do this?

There are three ways:—

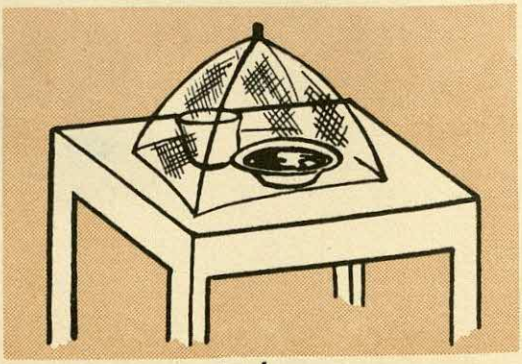
1. We must keep our house and our surroundings clean.
2. Unwanted food must be thrown in a rubbish bin, which must be kept covered by a well-fitting lid.
3. Our food on the table must be covered.

wrong

right



wrong



right

Write the following sentences in the correct order to show the life story of a housefly. Draw in the spaces.

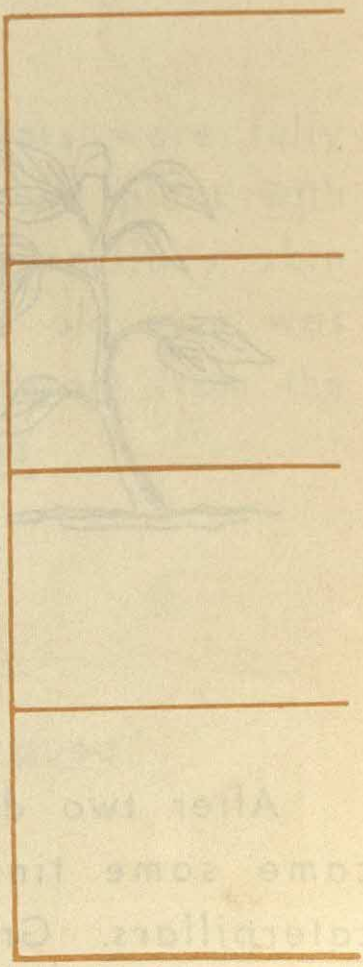
1. The mother housefly lays her eggs.
2. The maggot becomes a pupa.
3. The egg hatches into a maggot.
4. The pupa becomes a fly.

a. .....

b. .....

c. .....

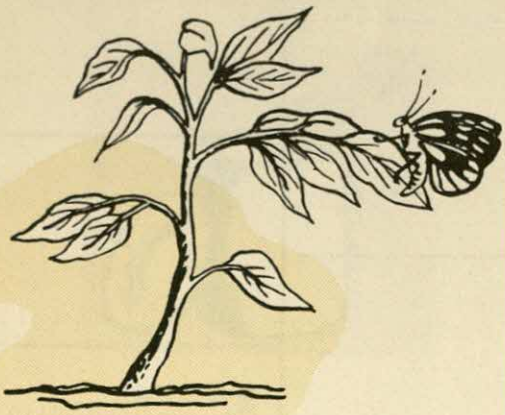
d. .....



The story of the butterfly.

One day a butterfly flew into Ashok's garden. For a while it flew from plant to plant, but then it settled for a moment on a leaf, before flying away.

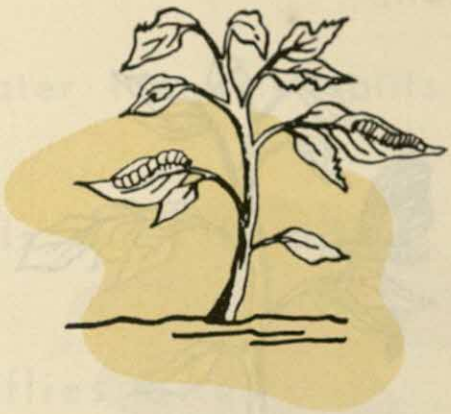
When Ashok went to look at the leaf, he found that the butterfly had laid some eggs on it.



Eggs

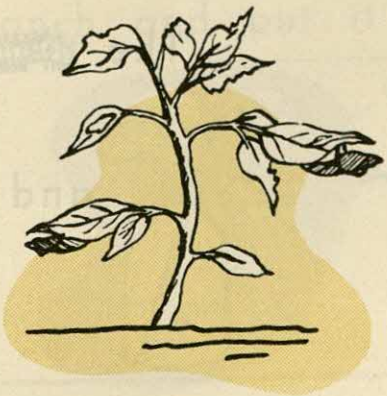
After two days, the eggs hatched, and out came some tiny worm-like creatures called caterpillars. Greedily, they began to eat the

leaves on which they were living. They grew bigger and bigger.



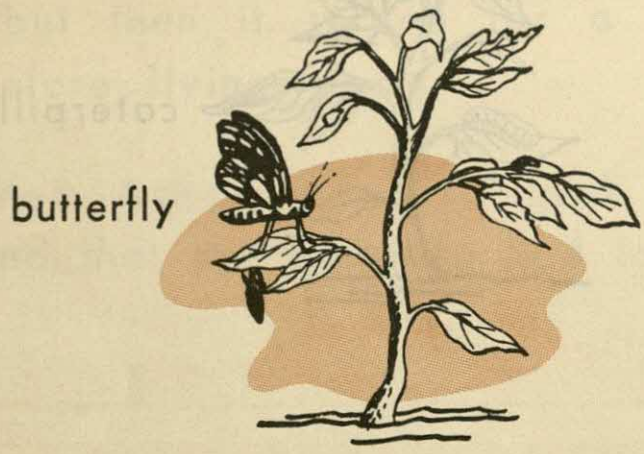
caterpillar

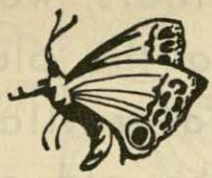
One day, when the caterpillars were fully grown, each one fixed itself to the plant with many threads of silk. The caterpillar's skin peeled off and there, inside the old skin was a creature that looked quite different from the caterpillar. We called it a pupa.



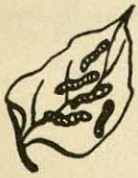
pupa

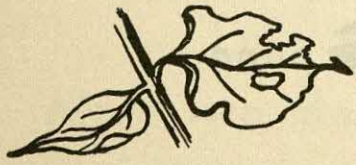
After many days, the pupa's tough skin splits open, and a beautiful butterfly crawls out, just like the one that laid the eggs in Ashok's garden.



A  ..... lays her  .....

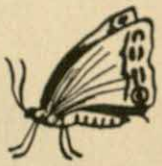
on a  ..... The  ..... hatch

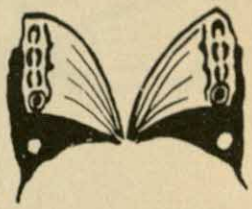
into  ..... The  ..... eats

 ..... and grows bigger

and bigger.

Then one day it turns into a  .....

Many days later the skin splits and a 

..... crawls out. It opens its 

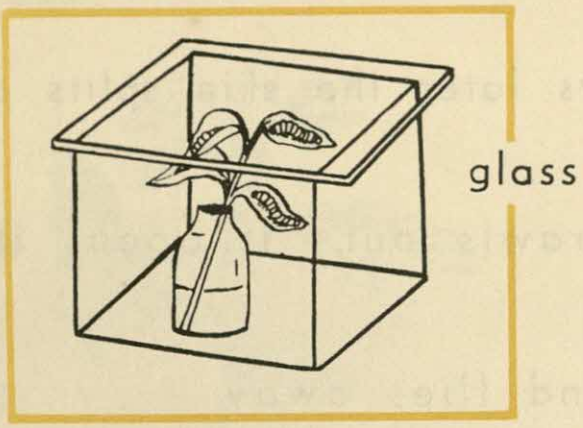
..... and flies away.

Something for you to do.

Find a plant with caterpillars on it.

Break off a branch and put it in a bottle of water.

Put this in a large box, with a sheet of glass for a lid.



Every day, take the caterpillars from the old leaves and put them on to some fresh ones. See that your fresh leaves are the same kind as the old ones.

What happens to your caterpillars?

Do they change into pupae?

Do they grow bigger?

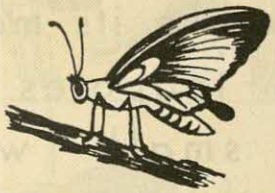
Do the pupae change into butterflies?

Perhaps you will find that instead of butterflies, your caterpillars become Moths.

Here are two insects. They look almost alike but they are different from one another. One is a moth and the other is a beautiful butterfly.

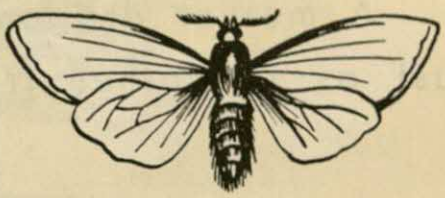
Can you tell a moth from a butterfly?

1. Butterflies have beautiful colours.

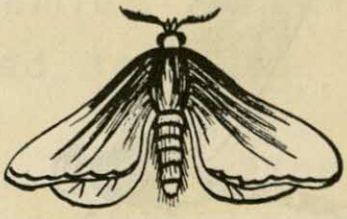


2. Butterflies fly in the day time. When a butterfly rests its wings are closed.

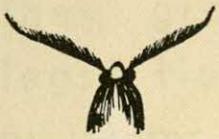
3. The feelers of a butterfly have knobs at their ends.



1. Most moths are dull coloured.



2. Moths fly about at night. When a moth rests its wings are open.



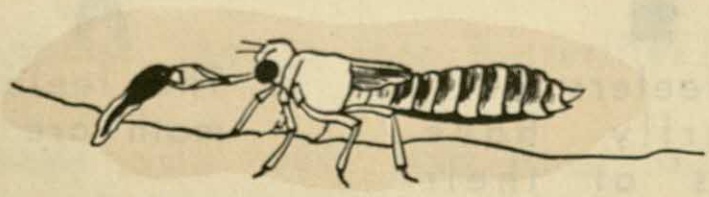
3. The feelers of a moth are hairy.

The Dragonfly.

The dragonfly is an insect. It flies about near streams, rivers and ponds, catching and eating small flying insects.

A mother dragonfly lays her eggs in water, just as a mother frog does.

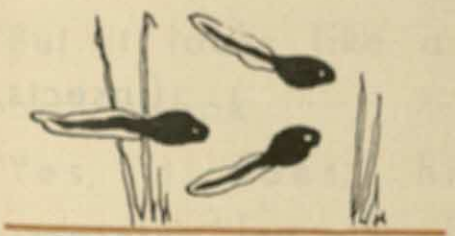
The eggs hatch into baby dragonflies called larvae. The larva does not look like its mother. It eats tadpoles and other small water animals. When it is fully grown, it crawls up the stem of a plant growing out of the water, its skin splits, and a young dragonfly crawls out.



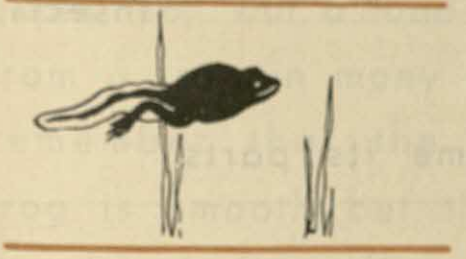
A larva eating a tadpole.

Frogs and tadpoles.

Here is a mother frog. She lays her eggs in water. The eggs are like jelly.



Not long afterwards, the eggs hatch into tiny swimming creatures called tadpoles.



At first the tadpoles have no legs. They eat water plants.

Later the tadpoles grow two back legs Then they grow two front legs. Now they eat small water animals.

The tadpoles become frogs.

Exercise.

Fill in the blanks.

1. The ..... frog lays eggs (mother, father, baby.)
2. She lays her eggs ..... (in water, on land, near water.)
3. The eggs of a frog look like ..... (jelly, water, cherries.)
4. The eggs hatch into ..... (insects, tadpoles, worms.)
5. At first, they eat ..... (insects, water plants, fish.)
6. Draw a frog here. Name its parts.

A frog and a toad.

One day Ashok found an animal in the garden. He picked it up in his hands and ran to the kitchen to show it to his mother. "Mummy, Mummy I've caught a frog!", he shouted.

His mother took a look.

"Why, it's a toad," she said.

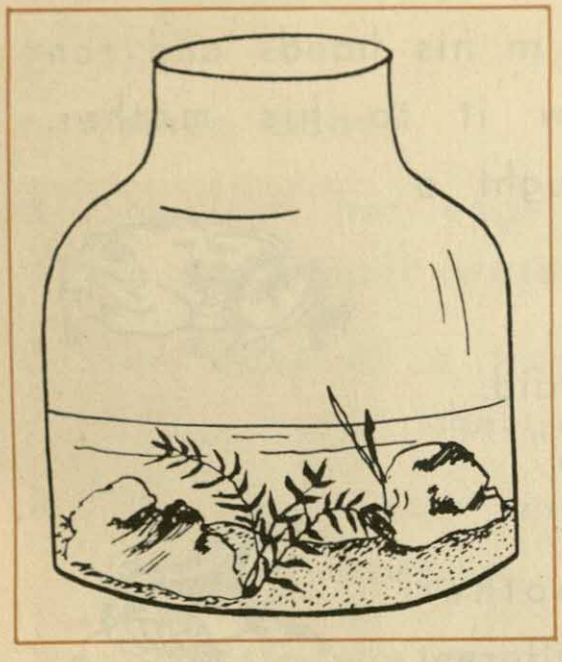
"But it looks like a frog," said Ashok.

"Yes, it does," his mother explained, "but a toad is different from a frog in many ways. You remember that the skin of a frog is smooth but the skin of your animal is rough. A frog lives very near water but a toad lives mostly on land, and its skin is dry. A frog is a very good swimmer and can leap away very quickly but a toad is a poor swimmer and hops about rather slowly. Let it go, and see how it hops."

Ashok let it go and saw it hop away.

How to keep tadpoles.

1. Get a big glass vessel like this one.



2. Put in some sand and stones and water plants, and half fill the vessel with water.

Find some frog's eggs or young tadpoles, and put them in the water.

Look at your tadpoles every day and see how they grow.

Draw pictures to show how they grow on this page and the next.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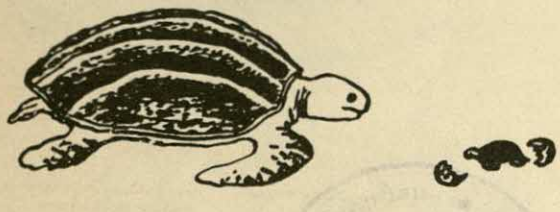
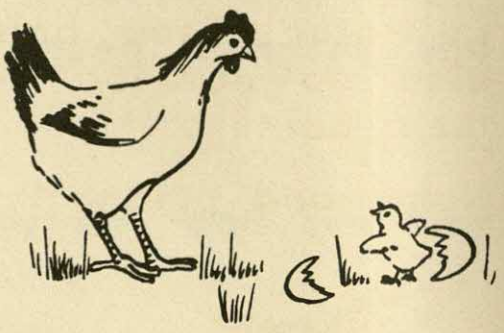
Animals and their young.

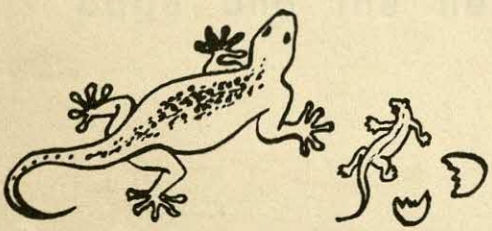
We know quite a lot about animals and their young.

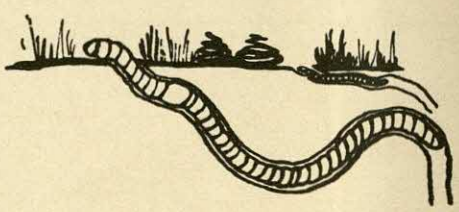
The animals shown here all lay eggs. Some sit on their eggs. This keep the eggs warm. Some bury their eggs. Some just go away and leave their eggs.

The eggs hatch into babies which look like their parents. Name and colour them.

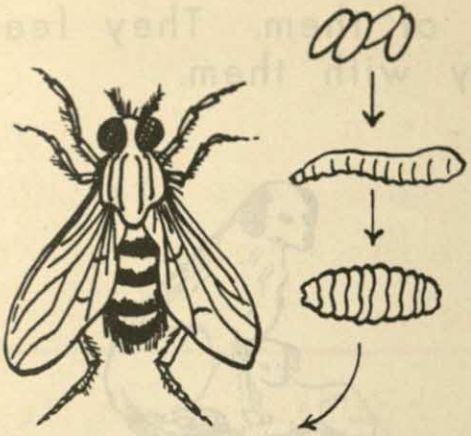


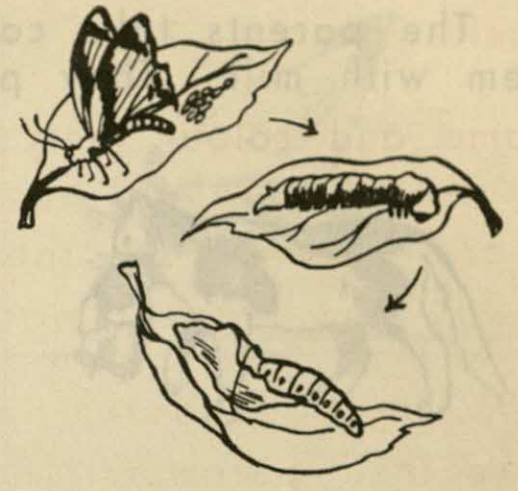






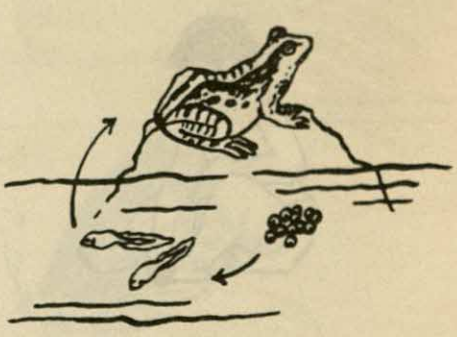
All these animals lay eggs. The eggs hatch into babies that do not look like their parents at all. Name and colour them.

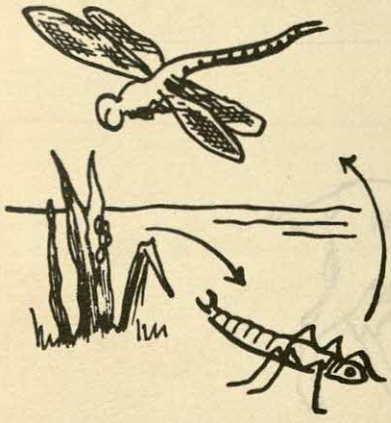


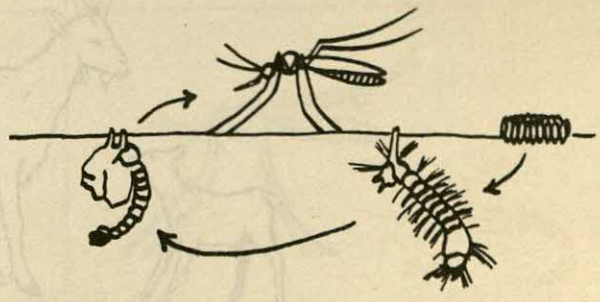


These animals lay eggs in water. Their babies also do not look like their parents.

Name and colour them.



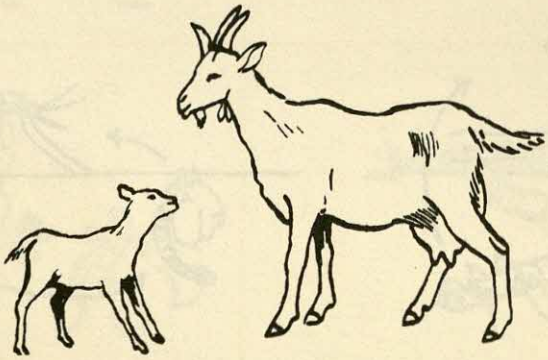




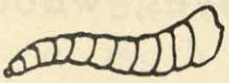
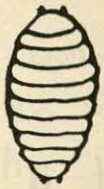
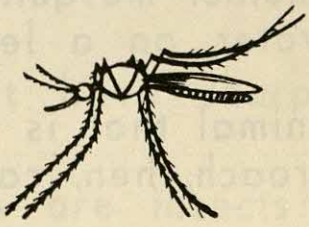
These animals do not lay eggs. Their babies are born alive. They look like their parents.

The parents take care of them. They feed them with milk. They play with them.

Name and colour them.



Draw the mothers or babies in the empty spaces. Write their names on the dotted lines.

Babies	Mothers
	
 	
	
	

A Test.

Fill in the blanks with the words given.

1. A plant takes in water through the..... (roots, leaves, stems.)

2. A scorpion protects itself by its..... (legs, tail, sting.)

3. All insects have..... (4 legs, 6 legs, 8 legs.)

4. A caterpillar eats..... (leaves, wood, paper.)

5. A larva is the young of a..... (cockroach, butterfly, mosquito.)

6. When a seed grows into a young plant the roots grow..... (upwards, downwards, sideways.)

7. A Rose plant protects itself by having ..... (thorns, poisonous leaves, no flowers.)

8. The mother mosquito lays her eggs..... (in water, on a leaf, in a box.)

9. An animal that is born alive is the..... (cockroach, hen, cat.)

10. The larva of a mosquito grows into a ..... (maggot, caterpillar, pupa.)

A Test.

Can you fill in the blanks?

1. A mother frog lays her eggs in ..... The eggs hatch into ..... These swim about in water and eat ..... Later the young grow two ..... legs, and then two ..... The young frog then leaves the water and lives on .....
2. A frog has a ..... skin, and a toad has a ..... skin.
3. A butterfly comes out in the ..... and a moth comes out in the .....
4. In a plant the ..... take in water and food from the .....
5. In a plant the ..... give out water.
6. Which of these animals lay eggs?
   Frog, dog, monkey, mosquito, turtle, fish.
   .....
7. Which of these animals give birth to young alive? Butterfly, Earthworm, cat, toad, goat, cow, man. .....
8. Name two plants that have white juice in their leaves. .....
9. Name two animals that have sharp claws in their feet. .....
10. Which of these animals are insects?
    Housefly, scorpion, lizard, beetle, dragonfly, cockroach, spider. .....

Draw animals that come into your school garden or your own garden.

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